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EXAMINER

LE, KIMLIEN T

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 07/17/2003

17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/540,657

Applicant(s)

REDMOND ET AL.

Examiner

Kimlien T Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 39-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,5,10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. Applicant's election of Group I, claims 1-38 in Paper No. 16 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 39-42 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No.16.

Specification

3. The specification is objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: In Fig. 18, reference character "1870" shown in the drawing is not mentioned in the description. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-22 and 26-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Tsuji et al (U.S. Patent 6,005,835).

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Regarding claim 1, see Figs. 8,9 and 10 of Tsuji et al which show an optical head for use in a optical read/write apparatus for use with a read/write medium comprising: a light source (105), outputting light at an initial light output location; at least a first photodetector array mounted in a fixed position with respect to the initial light output location, the first photodetector array (106,107 and 108) having at least a first surface defining a photodetector plane; an optical element unit(109), mounted in a fixed position with respect to the light output location, the optical element unit having first and second beam shaping optical elements which receive light output at the light output location, the optical element unit further comprising at least a third optical element configured for directing at least a portion of light reflected from the medium along a path for arrival at the first photodetector array; the optical head providing at least a first optical path, where the first optical path originates at the initial light output location and reaches at least the read/write medium(column 14, line 2 - column 15, line 45).

Regarding claim 2, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, wherein the optical element unit has first and second opposite surfaces and wherein the first and second beam-shaping optical elements are formed in the first and second surfaces respectively (column 14, line 2 - column 15, line 45).

Regarding claim 3, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, wherein the optical element unit further comprises at least a fourth optical element configured to provide a first focal plane for at least a first portion of light reflected from the medium, the first focal plane spaced a first distance from first photodetector array (column 14, line 2 - column 15, line 45).

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Regarding claim 4, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 3, wherein optical elements provided in the optical element unit are further configured to provide a second beam from at least a portion of the light reflected from the medium, the second beam impinging on a second photodetector array, spaced from the first photodetector array. (column 14, line 2 - column 15, line 45).

Regarding claim 5, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 4, wherein the second beam has a second focal plane spaced a second distance from the second photodetector array (column 14, line 2 - column 15, line 45).

Regarding claim 6, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 5, wherein the second distance is different from the first distance(column 14, line 2 - column 15, line 45).

Regarding claim 7, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 5, wherein the first focal plane and the second focal plane are on the same side of the photodetector plane (column 14, line 2 - column 15, line 45).

Regarding claim 8, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 5, wherein the first and second focal planes are on opposite sides of the photodetector plane (column 14, line 2 - column 15, line 45).

Regarding claim 9, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 5, wherein the first photodetector and the second photodetector arrays are substantially co-planer (column 14, line 2 - column 15, line 45).

Regarding claim 10, see Figs. 8,9 and 10 of Tsuji et al which show a Apparatus as claimed in Claim 1, further comprising a second optical block mounted in a fixed position with

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respect to the optical element unit, the second optical block configured to at least partially fold the first optical path to define at least a portion of the first optical path which is non-vertical (column 14, line 2 - column 15, line 45).

Regarding claim 11, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 10, wherein the second optical block includes at least a first beam splitter for directing at least a first portion of the light reflected from the medium along a second path having at least a portion different from the first optical path (column 14, line 2 - column 15, line 45).

Regarding claim 12, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 11, wherein the second optical block comprises a second beam splitter (column 14, line 2 - column 15, line 45).

Regarding claim 13, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 12, wherein at least one of the first and second beam splitters is a polarization beam splitter (column 14, line 2 - column 15, line 45).

Regarding claim 14, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, wherein the optical element unit is provided in the absence of optical elements configured to change a focal plane of light reflected from the medium (column 14, line 2 - column 15, line 45).

Regarding claim 15, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, wherein optical element unit further includes at least a first forward sense optical element configured for directing at least a portion of light from the first optical path to a forward sense detector (column 14, line 2 - column 15, line 45).

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Regarding claim 16, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 15, further comprising circuitry for using a signal from the forward sense detector to control a power level of the light source (column 14, line 2 - column 15, line 45).

Regarding claim 17, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, further comprising a coating on at least a portion of at least a first surface of the optical element unit (column 14, line 2 - column 15, line 45).

Regarding claim 18, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 17, wherein the coating is a substantially reflective coating (column 14, line 2 - column 15, line 45).

Regarding claim 19, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 17, wherein the coating is a substantially absorptive coating (column 14, line 2 - column 15, line 45).

Regarding claim 20, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 17, wherein the coating is positioned to reduce incidence of stray light at the photodetector (column 14, line 2 - column 15, line 45).

Regarding claim 21, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 17, wherein the coating is an anti-reflective coating (column 14, line 2 - column 15, line 45).

Regarding claim 22, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, wherein the optical element unit has at least a first alignment marking positioned on at least a first surface of the optical element unit (column 14, line 2 - column 15, line 45).

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Regarding claim 26, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 10, wherein at least a first surface of the optical element unit, adjacent the second optical block includes at least a first moat region formed therein, adjacent at least a portion of an edge of the surface (column 14, line 2 - column 15, line 45).

Regarding claim 27, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 26, wherein the moat receives at least a portion of adhesive introduced along the edge, the adhesive extending inwardly from the in edge no farther than the moat (column 14, line 2 - column 15, line 45).

Regarding claim 28, see Figs. 8,9 and 10 of Tsuji et al which show an optical head for a read/write apparatus comprising; a light source, optics configured to deliver at least a portion of light from the light source to a data medium and to deliver light reflected from the data medium to first and second spaced-apart photodetector arrays, each of the photodetector arrays providing output which is sensitive to position of light along a first axis of the photodetector arrays and substantially insensitive to position of light along a second, substantially perpendicular, axis of the photodetector arrays (column 14, line 2 - column 15, line 45).

Regarding claim 29, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 28, wherein the first photodetector array includes first second and third substantially parallel bar-shaped photodetector regions and wherein the second photodetector array comprises fourth, fifth and sixth substantially parallel bar-shaped photodetector regions (column 14, line 2 - column 15, line 45).

Regarding claim 30, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 29, further comprising circuitry for combining signals from the first, second,

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third, fourth, fifth and sixth photodetector regions to provide at least a focus error signal and a data signal (column 14, line 2 - column 15, line 45).

Regarding claim 31, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 29, further comprising circuitry for combining output from the first, third, fourth and sixth photodetector arrays regions to provide at least a first tracking error signal (column 14, line 2 - column 15, line 45).

Regarding claim 32, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 30, wherein the focus error signal is substantially a linear function of focus in a focus region including a nominal focus point (column 14, line 2 - column 15, line 45).

Regarding claim 33, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 29, wherein a size of at least the second and fifth photodetector regions, relative to the first and third regions is selected so as to reduce cross talk between a focus error signal and a tracking error signal (column 14, line 2 - column 15, line 45).

Regarding claim 34, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, further comprising an objective lens defining rim intensities at each perimeter location of a rim of the objective lens, with respect to a central light intensity, wherein the rim intensity is less than about 80 % in a tangential direction (column 14, line 2 - column 15, line 45).

Regarding claim 35, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, further comprising an objective lens defining rim intensities at each perimeter location of a rim of the objective lens, with respect to a central light intensity, wherein

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the rim intensity is less than about 80 % in a radial direction (column 14, line 2 - column 15, line 45).

Regarding claim 36, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, further comprising an objective lens defining rim intensities at each perimeter location of a rim of the objective lens, with respect to a central light intensity, wherein the rim intensity is greater than about 50 % in a tangential direction (column 14, line 2 - column 15, line 45).

Regarding claim 37, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, further comprising an objective lens defining rim intensities at each perimeter location of a rim of the objective lens, with respect to a central light intensity, wherein the rim intensity is greater than about 15 % in a radial direction (column 14, line 2 - column 15, line 45).

Regarding claim 38, see Figs. 8,9 and 10 of Tsuji et al which show an apparatus as claimed in Claim 1, wherein greater than 50% of a path length of the first optical path is within a solid structure and less than 50% of the path length of the first optical path is in air (column 14, line 2 - column 15, line 45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji et al (U.S. Patent 6,005,835) in view of Jiang et al (U.S. Patent 5,757,741).

Tsuji et al shows all the features of claim 1 except that the light source is an edge-emitter laser (claim 23) and VCSEL (claim 24). However, Jiang et al teaches using an edge-emitter laser (column 4, lines 32-35) and VCSEL (Abstract) as a light source in an optical storage system. Therefore, it would have been obvious to provide Tsuji et al with the edge-emitter laser and VCSEL as taught by Jiang et al. The rationale is as follows: one of ordinary skill in the art at the time of the invention would have been motivated to provide Tsuji et al with the edge-emitter laser and VCSEL as taught by Jiang et al because of miniaturization of a portion of an optical pick up head.

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji et al (U.S. Patent 6,005,835) in view of Oka (U.S. Patent 5,388,113).

Regarding claim 25, Tsuji et al shows all the features of claim 1 except that the light source is a blue-light laser. However, Oka teaches using a blue-light laser (column 1, lines 50-55) as a light source in an optical storage system (Fig. 7). Therefore, it would have been obvious to provide Tsuji et al with a blue-light laser source as taught by Oka. The rationale is as follows: one of ordinary skill in the art at the time of the invention would have been motivated to provide Tsuji et al with a blue-light laser source as taught by Oka, in order to provide stable light output.

Cited References

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references are all related to a low profile optical head.


Points of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimlien T Le whose telephone number is 703 305 3498. The examiner can normally be reached on M-F 8a.m-5p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on 703 305 6137. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9314 for regular communications and 703 872 9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305 3900.

Kimlien Le
July 14, 2003



W. R. YOUNG
PRIMARY EXAMINER